

**KEVIN GEYER HARRISON, Ph. D.**

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**EDUCATION:**

*Columbia University*, Ph.D., Geological Sciences, 1994. Dissertation: “The impact of CO<sub>2</sub> fertilization, changing land use, and nitrogen deposition on soil carbon storage.” Advisor: Wally Broecker.

*Columbia University*, M. Phil., Geological Sciences, 1993.

*Scripps Institution of Oceanography*, University of California, San Diego, M.S., Marine Chemistry, 1989.

*Brown University*, Sc.B., Honors, Chemistry, 1986.

*Brown University*, A.B, English and American Literature, 1986.

**PROFESSIONAL EXPERIENCE:**

Affiliated Scholar, Geosciences, *Denison University*, 2014 to present.

Visiting Assistant Professor, *Denison University*, 2013-14.

Assistant Professor of Environmental Policy and Science, *McDaniel College*, 2005—2010.

Visiting Assistant Professor, *Northeastern University*, Department of Earth and Environmental Sciences, 2004—2005.

Assistant Professor, *Boston College*, Department of Geology and Geophysics, 1997-2004.

Earth Sciences Postdoctoral Fellow, National Science Foundation, *Duke University*, 1995-1997.

Global Change Distinguished Postdoctoral Fellow, Department of Energy, *Oak Ridge National Lab*, 1994.

Global Change Graduate Fellow, National Aeronautics and Space Administration, *Columbia University*, 1991-1993.

Graduate Research Fellow, *National Center for Atmospheric Research*, Advanced Study Program, Boulder, CO, 1990.

## PUBLICATIONS:

- Harrison, K. G. 2017. Using impact exsolution to link the Chicxulub collision and Deccan volcanism. *arXiv:1701.04704*.
- Harrison, K.G. 2004. The soil carbon CO<sub>2</sub> fertilization factor: The measure of an ecosystem's capacity to increase soil carbon storage in response to elevated CO<sub>2</sub> levels. *Geochemistry, Geophysics, Geosystems*, 5, 5, Q05002, doi:10.1029/2003GC000686.
- Harrison, K.G., R.J. Norby, W.M. Post & E.L. Chapp. 2004. Soil carbon accumulation in a white oak CO<sub>2</sub> enrichment experiment via enhanced root production. *Earth Interactions*, 8, 1-15, DOI: 10.1175/1087-3562(2004)8<1:SCAIAW>2.0.CO;2.
- Harrison, K.G. 2000. The role of increased marine silica input on paleo-pCO<sub>2</sub> levels. *Paleoceanography*, 15, 3, 292-298. [Reviewed by Treguer, P. and P. Pondaven. 2000. Silica control of carbon dioxide. *Nature*, 406, 358-359.]
- Harrison, K.G. & G. Bonani. 2000. A strategy for estimating the potential soil carbon storage due to CO<sub>2</sub> fertilization. In *The Global Carbon Cycle*, edited by T.M.L. Wigley, D.S. Schimel, Cambridge: Cambridge University Press, 141-150.
- Andrews, J.A., K.G. Harrison, R. Matamala & W.H. Schlesinger. 1999. Separation of root respiration from total soil respiration using C-13 labeling during Free-Air CO<sub>2</sub> Enrichment (FACE). *Soil Science Society of America Journal*, 64, 1429-1435.
- Harrison, K.G. 1997. Using bulk radiocarbon measurements to estimate soil organic matter turnover times. In *Soil Processes and the Carbon Cycle*, Advances in Soil Science, edited by Rattan Lal, John M. Kimble, Ronald F. Follett, Bobby A. Stewart, New York: CRC Press, 549-559.
- Harrison, K.G. 1996. Using bulk soil radiocarbon measurements to estimate soil carbon turnover times: Implications for atmospheric CO<sub>2</sub> levels. *Radiocarbon*, 38, 2, 181-190.
- Harrison, K.G. 1995. The role of increased silica input on Paleo-CO<sub>2</sub> levels. *EOS*, 76, 46, F292.
- Harrison, K.G., W.M. Post & D.D. Richter. 1995. Soil carbon turnover in a recovering temperate forest. *Global Biogeochemical Cycles*, 9, 4, 449-454.
- Richter, D.D., D. Markewitz, C.G. Wells, H.L. Allen, J. Dunscombe, K.G. Harrison, P.R. Heine, A. Stuanes, B. Urrego & G. Bonani. 1995. Carbon cycling in an old-field Loblolly pine forest: Implications for "missing" carbon sinks and for the fundamental concept of soil, In *Proceedings, Eighth North American Forest Soils Conference*, Univ. Florida, Gainesville, edited by W. W. McFee, J. M. Kelly, 233-251.
- Connin, S.L., R.A. Virginia, P. Chamberlain, L. Huenneke, K.G. Harrison & W.H. Schlesinger. 1995. Dynamics of carbon storage in degraded arid land environments: A case study from the

Jornada Experimental Range, New Mexico (USA). In *Combating Global Warming by Combating Land Degradation*. United Nations Environment Programme (UNEP), edited by V. R. Squires, E. P. Glen & A. T. Ayoub, 132-145.

Harrison, K.G., W.S. Broecker & G. Bonani. 1993a. A strategy for estimating the impact of CO<sub>2</sub> fertilization on soil carbon storage. *Global Biogeochemical Cycles*, 7, 1, 69-80.

Harrison, K.G., W.S. Broecker & G. Bonani. 1993b. The effect of changing land use on soil radiocarbon. *Science*, 262, 725-726.

## **REPORTS:**

Segal, M.G. & K.G. Harrison. 2003. Soil carbon storage in abandoned agricultural land in the Duke Forest. In *Changing Land Use and Terrestrial Carbon Storage*, Global Discovery Press, 34-53.

Harrison, K.G. M.G. Segal, M.H. Hoskins & A.L. Kafka. 2003. Assessing the impact of tillage methods on soil carbon levels and crop yield. In *Changing Land Use and Terrestrial Carbon Storage*, Global Discovery Press, 22-33.

Mahoney, R. J., A.L. Kafka & K.G. Harrison. 2003. Procedure for determining soil-bound organic carbon and nitrogen. In *Changing Land Use and Terrestrial Carbon Storage*, Global Discovery Press, 1-21.

Weiss, R.F., M.J. Warner, P.K. Salameh, F.A. Van Woy & K.G. Harrison. 1993. South Atlantic Ventilation Experiment: SIO chlorofluorocarbon measurements. *SIO Reference 93-94*.

## **FUNDING:**

### *External Grants:*

United States Department of Agriculture, National Research Initiative: \$125,015 for “The impact of CO<sub>2</sub> fertilization on soil carbon storage below a forest.” 8/01-11/04.

American Chemical Society: \$30,000 for “Studies on the paleoecology of the bright angel shale.” In collaboration with Paul Strother (Boston College). 2/00-8/02.

US Department of Energy: \$32,000 for “Soil carbon dynamics in a temperate forest and its cultivated counterpart.” In collaboration with Mac Post (Oak Ridge National Laboratory). 1/96-1/97.

US Department of Energy: \$120,000 for “The effects of changing land use on organic carbon and nitrogen storage in mid-latitude North American soil and rice paddies.” In collaboration with Wally Broecker (Columbia University). 9/91-9/93.

### *Fellowships:*

National Science Foundation: \$72,000 for Earth Sciences Postdoctoral Fellowship, 1995-1997.

Department of Energy: \$65,000 for Global Change Distinguished Postdoctoral Fellowship, 1993-1994.

NASA: \$44,000 for Global Change Graduate Fellowship, 1991-1993.

National Center for Atmospheric Research, Advanced Study Program: \$25,000 for Graduate Research Fellowship, 1990.

### **INNOCENTIVE AWARD:**

Awarded \$1000 by InnoCentive ([www.innocentive.com](http://www.innocentive.com)) for developing an optimum software pricing model for high performance computing applications (Innocentive ID 7555528; [dev.innocentive.com/servlets/project/ProjectInfo.po?s=AW](http://dev.innocentive.com/servlets/project/ProjectInfo.po?s=AW))

### **HONORS:**

*Best Professor*, awarded by graduate and undergraduate students in the Geology and Geophysics Department, Boston College, 2004, 2002 and 1999.

*Best Course*, awarded for “Environmental Geochemistry: Living Dangerously” by graduate and undergraduate students in the Geology and Geophysics Department, Boston College, 2002.

Favorite Professor, *Sub Turri*, the yearbook of Boston College, awarded by the Class of 1999.

Sigma Xi Honor Society, 1986 to present.

### **COURSES:**

#### **Denison University**

Science and the Environment (ENVS 102).

#### **McDaniel College**

Senior Seminar (EPS 4494).

Biogeochemistry of the Habitable Planet (EPS 3112).

Climate Change (EPS 3110).

Energy and the Environment (EPS 1116).

Environmental Chemistry (EPS 2203).

Environmental Geology (EPS 1117).

Environmental Problem Solving (EPS 1131).

Environmental Problem Solving—First Year Seminar (EPS 1131).

#### **Northeastern University**

Dynamic Earth (GEO 200).  
Earth Landforms and Processes (GEO 340).  
Glacial and Quaternary History (GEO 570).  
Global Climate Change (GEO 116).

### **Boston College**

Biogeochemistry of the Habitable Planet (GE 465).  
Climate Change (GE 405).  
Environmental Geochemistry: Living Dangerously (GE 392).  
Environmental Seminar (GE 580).  
Exploring the Earth I (GE 132). In collaboration with Chris Hepburn.  
Marine Geological Processes (GE 692). In collaboration with Alan Kafka and Gail Kineke.  
Weather, Climate, and the Environment II: Global Warming (GE 175).

### **TEACHING QUANTITATIVE SKILLS IN THE GEOSCIENCES (SERC)**

Developed an on-line exercise for teaching quantitative skills in the geosciences. “Machines that change climate: Porsche 911 Turbo vs. Toyota Prius.” This activity shows students that decisions they make can significantly alter the amount of greenhouse gases they release to the environment. Science Education Resource Center (SERC) at Carlton College.  
([serc.carleton.edu/quantskills/activities/harrison.html](http://serc.carleton.edu/quantskills/activities/harrison.html))

### **COMMUNITY SERVICE/PUBLIC EDUCATION:**

Terrestrial Carbon Research Program Proposal Review, US Department of Energy, Washington, DC. Program Manager: Mike Kuperberg. June 15-16, 2010.

Radio interview: National Public Radio, Midday Show with Dan Rodricks (WYPR Baltimore). “What happens to discarded cell phones?” March 19, 2008.

Television Special: History Channel, “Life After People.” Appeared on show to explain how chemical and physical weathering would alter the landscape. Originally broadcast January 21, 2008. [http://www.history.com/minisites/life\\_after\\_people](http://www.history.com/minisites/life_after_people)

Radio interview: National Public Radio, Marc Steiner Show (WYPR Baltimore). “Google’s recently-announced renewable energy initiatives.” December 3, 2007.

Radio interview: National Public Radio, Marc Steiner Show (WYPR Baltimore). The show explored the multi-million dollar bottled water industry. July 24, 2007.

Quoted by Simon Busch, *Financial Times* in, “It’s time to warm to the wild look,” which discussed how global warming was influencing gardeners and farmers. March 30, 2007.  
[http://us.ft.com/ftgateway/superpage.ft?news\\_id=fto033020071405420504](http://us.ft.com/ftgateway/superpage.ft?news_id=fto033020071405420504)

Radio interview: National Public Radio, Marc Steiner Show (WYPR Baltimore). “Renewable energy and President Bush’s State of the Union Speech.” January 25, 2007.

Television interview: WBAL-TV, Baltimore (NBC affiliate). “Global Warming Could Change the Baltimore Landscape.” The story relates to the Supreme Court Case on anthropogenic climate change and EPA’s role in regulating carbon dioxide emissions. Broadcast November 29, 2006.

<http://www.thewbalchannel.com/video/10425675/index.html?taf=bal>

Terrestrial Carbon Research Program Proposal Review, US Department of Energy, Washington, DC. Program Manager: Dr. Roger Dahlman. May 31–June 2, 2006.

Reviewed two Web-based projects for “Teaching Quantitative Skills in Geoscience.” The “Teaching Quantitative Skills in Geoscience” program is funded by a series of grants from the National Science Foundation and administered by the Science Education Research Center (SERC) at Carleton College: <http://serc.carleton.edu/>

Carbon Cycle Panel. Reviewed grant proposals and recommended awards for proposals submitted to the North American Carbon Program for US Department of Agriculture, US Department of Energy, and NASA, Summer, 2004.

Invited speaker, “Can Si control atmospheric carbon dioxide levels?” AGU Chapman Conference, The Role of Diatom Production and Si Flux and Burial in the Regulation of Global Cycles, Paros, Greece, Fall 2003.

Moderator, Earth Day Global Warming debate between Bill Moomaw and Andrew Solow, Boston College, April, 2000.

Director, Undergraduate Studies, Department of Geology and Geophysics, Boston College, 1999-2004.

Convened special session, “Balancing the global atmospheric carbon dioxide budget,” American Geophysical Union Meeting, San Francisco, CA, Fall 1999.

Session chair, “Paleoceanography and Paleoclimatology: Observations and Models,” American Geophysical Union Meeting, Boston, MA, Spring 1999.

Interviewed by NHK (Japan Broadcasting Corporation) about my “silica hypothesis” for explaining the glacial/interglacial pCO<sub>2</sub> transition. Episode 8, Planet Ocean Series, broadcast December, 1998.

Featured scientist: “Missing carbon may be soil bound.” *Geotimes*, 42, 7-8, 1997.

Featured scientist: presented my global change research on *Cable News Network's* (CNN) “Headline News” and “Science and Technology Week” programs, broadcast November and December, 1993.

Interviewed for “The Case of the Missing Carbon,” *Discover*, 38-39, December, 1993.

**PROFESSIONAL DEVELOPMENT:**

“New Approaches and Techniques for Teaching Science: Addressing environmental problems to stimulate undergraduate learning.” National Science Foundation Workshop, Governors State University, June, 2006.

[http://www.envsci-ed.brockport.edu/Map\\_work/2001\\_Regional\\_Workshops.htm#IL](http://www.envsci-ed.brockport.edu/Map_work/2001_Regional_Workshops.htm#IL)

“Strategies for Success Science Education Workshop,” Virginia Commonwealth University, March, 2006.

“Developing Quantitative Skills Activities for Upper Division Geoscience Students,” SERC/DLESE, Carleton College, July, 2005.

“Effective Teaching Methods for Biology and Environmental Studies,” NSF Chautauqua Faculty Development Program, Harvard University, May, 2005.

“Preparing Competitive Research Proposals,” Boston Consortium for Higher Education, July, 2003.

“Effective Scientific and Technical Writing Seminar,” Boston Consortium for Higher Education, July, 2003.

“Workshop for Early Career Faculty in the Geosciences: Teaching, Research and Managing your Career,” National Association of Geoscience Teachers and National Science Foundation, Williamsburg, VA, 1999.